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Original communication

Survey of medico-legal investigation of homicides in the city of Turku, Finland

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Abstract

Finland has one of the highest homicide rates in western Europe but the clear-up rate is also exceptionally high. To create a detailed analysis of homicides ($n = 161$) in a region of western Finland during the 20-year period from 1983 to 2002 all available information was collected retrospectively from multiple sources including medico-legal reports, reports of police investigations, and court proceedings. Among the data collected and analysed were location, time, circumstances, and motives of homicides, forensic pathologists' role at the scene-of-the-crime and in court, autopsy findings, demographics and substance abuse of both victims and offenders, criminal background, forensic psychiatric examinations, and the verdicts of the offenders. A typical homicide was committed without premeditation during the weekend by a drunken male with a knife at hand and with a history of violent crimes. The perpetrator was later found guilty of manslaughter and received a prison sentence. Some noted shortcomings both in the police and the medico-legal investigation procedures are discussed, as well as the forensic pathologist's role in the judicial process in Finland.

Keywords: Homicide; Finland; Medico-legal; Victim; Offender

1. Introduction

Homicide is widely accepted as a public health problem,[1] which can be understood to reflect the contemporary societies' concern with the heightened incidence of deliberate physical violence seen in all industrialized countries over the last decades. Finland (5.2 million inhabitants) has one of the highest homicide rates in western Europe, three times higher than other Scandinavian countries, even though the absolute number of homicides has remained relatively low (in 1983–2002 mean 135 homicides per year).[2–4]

By Finnish law,[5] every known or suspected unnatural death must undergo a medico-legal investigation. Approximately 90% of the victims of unnatural deaths and all suspected homicide victims are subjected to a medico-legal autopsy.[6] The forensic pathologist determines the cause and manner of death and signs the death certificate. All death certificates are further scrutinized by provincial medico-legal experts before this information is transmitted to the National Bureau of Statistics (Statistics Finland).

In a Finnish study of missing persons it was suggested that very few victims of homicide remain unknown to the police.[7] Furthermore, the legislation and rigorous autopsy practice have kept the number of undetected homicides low, and this combined with the statistical procedure give an excellent basis for systematic analysis of homicides. Research has so far focused mainly on criminological and sociological aspects of homicide,[4,8–11] or on restricted entities like intrafamilial child homicides,[12,13] or forensic psychiatric studies.[14,15]

As a part of a larger on-going survey, the aim of the present study was to establish the incidence of various forms of homicide in a region of western Finland and to

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examine the characteristics associated with them. The study focused on a detailed analysis of homicides occurring within this population during two decades to contribute a more in-depth description of all the different aspects of local homicidal violence ranging from the scene of the crime to the courts of justice.

2. Materials and methods

The study included all homicidal deaths ($n = 172$) examined at the Department of Forensic Medicine, University of Turku, Finland, during the 20-year period from January 1st 1983 to December 31st 2002. During the study period, the Department served an area which comprised the city of Turku and a number of smaller adjacent communities, both urban and rural, with a total population of approximately 300,000 inhabitants.[3] The cases were first identified through a manual search of the departmental files, and later Statistics Finland was consulted to verify that all such deaths had been included. The inclusion criterion was that the death had been certified as a homicide by a forensic pathologist. Delayed deaths as a consequence of complications of trauma due to an assault more than 1 year previously (2 cases) and felonies abroad (5 cases) were excluded from the material.

The information regarding the remaining 165 victims was collected retrospectively from the case files at the Department of Forensic Medicine and each case was reviewed in detail. The anatomical, toxicological and other objective findings in the autopsy reports were recorded as well as the location and time of assault, location of the body, whether the forensic pathologist visited the scene of the crime, time of death, manner of victim identification, and the demographic characteristics (nationality, marital status, employment status, and domicile) of the victim. Based on the cause of death, the cases were divided into the following categories: sharp force injury, gunshot wound, blunt force injury, strangulation/suffocation, drowning, burning and poisoning.

Additional material concerning the incidences, including police interview protocols and scene-of-the-crime investigation data, was obtained from the pre-trial investigation files of the regional police departments. These records were analyzed for demographics of the offenders (nationality, marital status, employment status, and domicile), the relationship between victims and offenders, circumstances and motives for the offence, and known history of substance abuse and criminal background of the parties involved. Autopsy reports of those offenders who committed suicide in connection with the homicide, were obtained and reviewed for all available demographic and toxicological data. Since, in Finland, the data in the criminal records are deleted after a person is deceased, no criminal records were available for the victims. For the offenders who were still alive, the criminal records were obtained from the Legal Register Center of the Ministry of Justice.

The information regarding court proceedings of the cases was obtained from the archives of the prosecutor's office, the district courts and the court of appeal. Among the data collected were whether the forensic pathologist was called to court, whether there was a forensic psychiatric examination, and if there was, the outcome of this, and the verdicts. If the case had been appealed during the court process, only the final outcome was taken into consideration.

3. Results

During the 20-year period a total of 161 homicide incidents occurred in Turku and its surroundings, perpetrated by 178 identified offenders and resulting in the death of 165 persons (Fig. 1). Of these homicidal deaths 5 (2 foreigners, 3 Finnish citizens) were found in the departmental files but not in the files obtained from Statistics Finland.

The annual incidence of homicides varied between 3 and 13, and peaked slightly in the month of July. Approximately one-third (34%; $n = 56$) of the fatal encounters occurred on a Friday or a Saturday, and during other days of the week the percentage varied between 10% ($n = 17$) and 16% ($n = 26$). Of the incidents, 71% ($n = 117$) occurred between 5.30 p.m. and 5 a.m., 21% ($n = 34$) were evenly distributed throughout the rest of the day, and for the remaining 8% (14) the time of day could not be retrieved from the files.

In this study, the majority of all identified offenders acted alone, 16% ($n = 27$) of the victims died at the hands of multiple (from 2–6) assailants acting in concert. However, there were no cases involving actual organized gangs. Of the homicide incidents 2% ($n = 4$) involved 2 victims and 1 offender and during the whole study period 6 offenders committed homicides in 2 separate incidents.

Of the 157 reported (one-to-one) homicidal relationships 67% ($n = 105$) were intrasexual. Both the victim and the offender were male in 66% ($n = 104$) of the cases and female in less than 1% ($n = 1$). About 31% ($n = 49$) of the homicides involved an interaction between persons of different sexes, i.e. a male killing a female (25%; $n = 40$), or a female killing a male (6%; $n = 9$).

The majority of the offences (59%; $n = 97$) took place in a private residence. Most fatalities occurred at the scene of the crime and in the overwhelming majority (81%; $n = 134$) of all cases, the victims were also found there. In 16% ($n = 27$) of all the incidents, the forensic pathologist was called to the scene of the crime. In 8% ($n = 13$) of the cases it was obvious that the perpetrator had moved the body from the scene. 9% ($n = 15$) of the victims were found covered, and additionally 3 victims were hidden in a trunk or a freezer, and 5 victims in water. In 21% ($n = 34$) of the cases the victims died during hospital treatment, 5.5% ($n = 9$) of the victims survived over a period of 1 week after the assault.

In 4% ($n = 6$) of the cases, the police did not suspect a homicide prior to the autopsy.

3.1. Victims

Males (73%; $n = 121$) outnumbered females (27%; $n = 44$) as victims of homicide. All the victims were positively

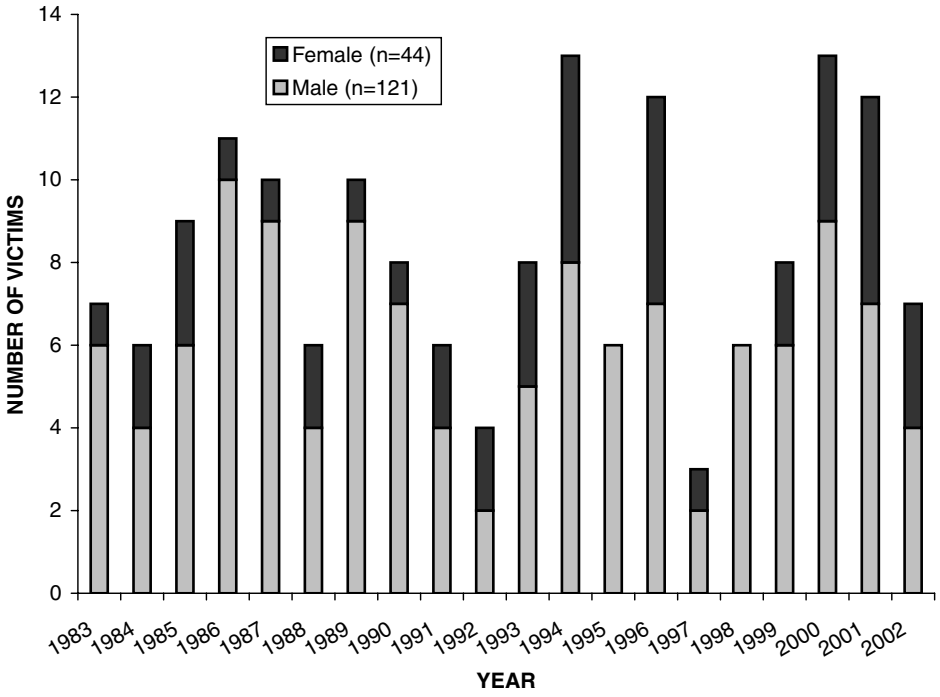

Fig. 1. Number of homicides in Turku area, 1983–2002.

identified, 95% ($n = 156$) were identified visually and in 5% ($n = 9$) of the cases other identification methods had to be used.

The most frequent victims were males in the age group of 31–40 years of age (Fig. 2). Mean age of all male victims was 40.8 years and of female victims 40.9 years. Children under 10 years of age constituted 2% ($n = 4$) of the victims. There was 1 case of homicide committed against a child less than 1 year of age, and 1 female victim was 19–20 weeks pregnant at the time of the incident.

A vast majority of victims (98%; $n = 161$) were Finnish citizens, only 4 were of foreign nationality (German, Russian, Swedish, and Turkish). At the time of the offence 46% ($n = 76$) of the victims were married, cohabitant, or otherwise involved in a long-term intimate relationship and 7% ($n = 12$) of the victims had no accommodation.

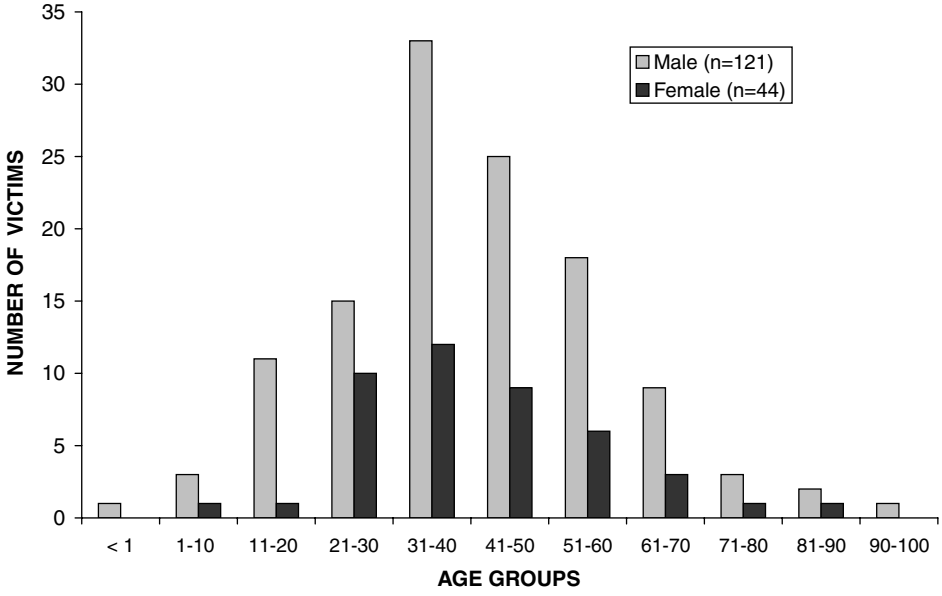

Fig. 2. Age distribution of the victims ($n = 165$).

Of the 105 victims where information was available 23% ($n = 24$) were unemployed.

In 58% ($n = 96$) of the victims there was evidence of long-term alcohol abuse, in 7% ($n = 11$) of abuse of medicinal drugs, and in 5% ($n = 8$) of illicit drugs.

3.2. Offenders

Offender(s) remained unidentified in 2% ($n = 3$) of the incidents. The majority of the identified offenders were males (91%; $n = 162$). The age of the perpetrators ranged between 12 and 84 years, the majority (56%; $n = 100$) were between 20 and 40 years old, with a mean of 34.1 years. 2% ($n = 4$) of the offenders were adolescents (under 15 years of age).

Foreign citizens (Egyptian, Iraqi, Pakistani, Spanish, and Swedish) comprised 3% ($n = 5$) of the offenders. 22% ($n = 39$) of the offenders committed homicide while released on parole, 6% ($n = 10$) while waiting for execution of a prior sentence and 1% ($n = 2$) offended while serving their sentence. At the time of the offence, 39% ($n = 69$) of the assailants were married, cohabitant, or otherwise involved in a long-term intimate relationship, and 13% ($n = 23$) were homeless. Information on employment was available for 90% ($n = 161$) of the offenders and 48% ($n = 78$) of them were unemployed.

A history of prolonged consumption of alcohol was frequently found among the perpetrators. 73% ($n = 130$) of the offenders were known as substance abusers: alcohol (71%; $n = 126$), medicinal drugs (22%; $n = 39$) and illicit drugs (17%; $n = 30$).

Information about prior criminal history was available and could be studied for 85% ($n = 151$) of the offenders showing that 88 offenders had a criminal record, almost two-thirds because of previous violent offences. One-third had an extensive criminal record with over 15 prior convictions. 5 male offenders had a history of previous homicides outside this material, and 6 offenders committed homicides in 2 separate incidents during the 20-year period studied.

3.3. Toxicology

Toxicological analyses were performed in 93% ($n = 153$) of the victims. Among these, 65% ($n = 100$) of the analyses were for alcohol only, in the remaining 35% ($n = 53$) of the cases the victims had also been tested for various drugs. Alcohol analysis was performed on all 93% ($n = 153$), with 63% testing positive (Fig. 3). Of the 16 victims who survived more than 24 hours in hospital, 11 could be tested for alcohol (by utilizing blood samples taken upon arrival at the hospital) with 6 testing negative. Out of 8 children and adolescents (under 18 years of age) in this study 5 were tested for alcohol with all of them testing negative. Of those victims who were screened for drugs, 38% (20/53) tested positive for medicinal drugs, and an additional 7.5% (4/53) yielded illicit drugs (tetrahydrocannabinol, amphetamine) in the blood. Male victims were more frequently intoxicated than female victims. Of all male victims 66% ($n = 80$) were under the influence of alcohol, of the female victims 39% ($n = 17$). The blood alcohol concentration (BAC) ranged from 0.2 to 5.5 g/l, and the mean BAC was 2.3 g/l. The range of BAC detected in victims is shown in Fig. 3.

According to data from police investigations 29% ($n = 51$) of all offenders had a positive finding for alcohol, and another 26% (47) lacked analytic data but had been

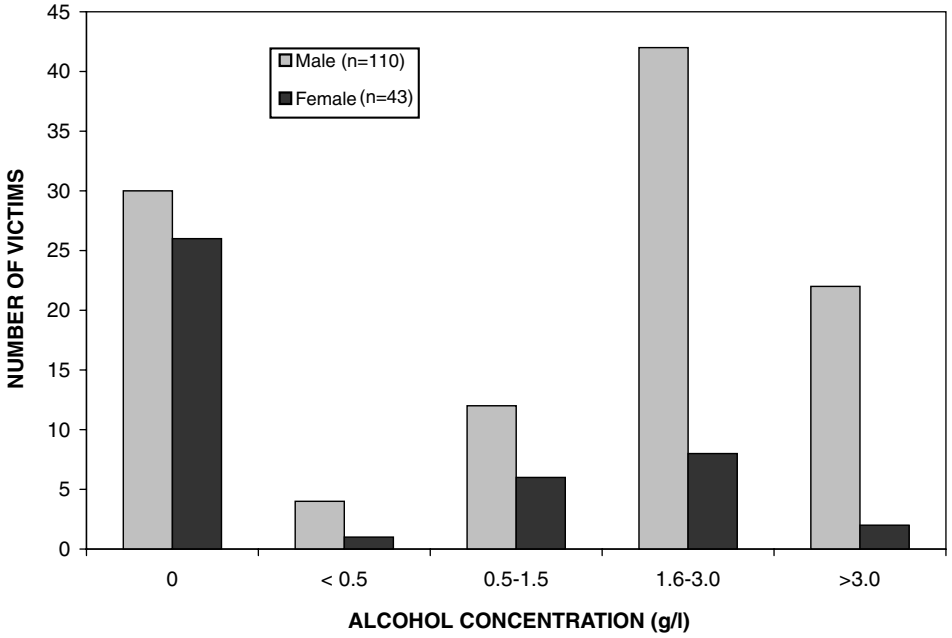

Fig. 3. Blood alcohol concentration in homicide victims ($n = 153$).

considered by the investigating police officers or eye-witnesses to have been intoxicated. Blood alcohol concentration was determined in 24% ($n = 42$) of the cases, and breath alcohol analyser was used in 10% ($n = 18$). Other intoxicants besides alcohol were detected on drug screening in 4% ($n = 7$) of the offenders, and additional 3% ($n = 5$) of the offenders were estimated to have been using drugs.

In all, alcohol was shown to be present in 65% ($n = 105$) of the homicide incidents. It could be shown that both parties had been drinking in at least 26% ($n = 42$) of the cases, and that in 4% ($n = 6$) of the cases, both had been proven to be sober.

3.4. Histology

During autopsy, histological samples were retained and studied for 45% ($n = 74$) of the victims.

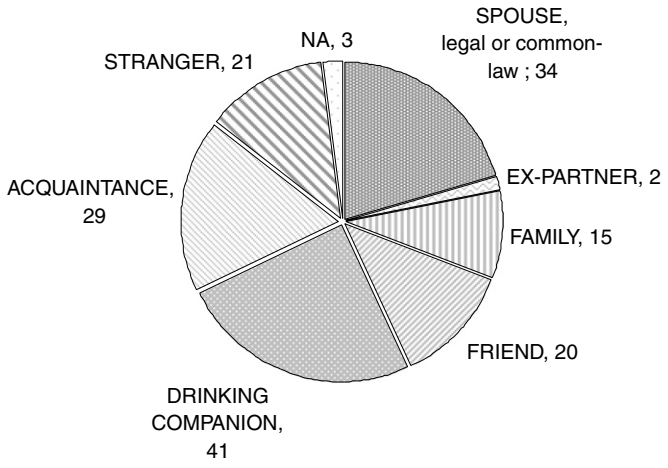

Fig. 4. Relationship of homicide offender to victim ($n = 165$).

3.5. Relationship between the offender and the victim

Most reported killings where an offender was identified occurred between persons who had some prior relationship (Fig. 4). One-fifth (21%; $n = 34$) of all homicides took place between spouses or otherwise long-term intimate partners. A further 9% ($n = 15$) occurred within the family and 13% (20 males, 1 female) of homicide victims were killed by a stranger.

3.6. Motives

From Table 1 it is evident that in the current study, quarrelling while drinking (28%; $n = 47$) was the most common circumstance leading to homicide, and an additional 11% ($n = 19$) of the victims were killed in an otherwise quarrelsome milieu. Of the homicides 16% ($n = 27$) were motivated by jealousy, 8% ($n = 14$) by revenge, 3% ($n = 5$) by financial gain and 4% ($n = 7$) of the homicides occurred in conjunction with another crime. Delusions in connection with mental health problems and defending one's honour were circumstances where the violent offences had been committed in 2% ($n = 4$; respective) of the cases, and self-defence in a violent situation led to 1% ($n = 2$) of the homicides. Racism, sexual motive, legal intervention, extended suicide, and compassion were rare motives, as each accounted for only one case in the study material. Finally, in 4% ($n = 7$) of the cases the injury leading to the victim's death had probably been entirely unintentional.

3.7. Method

A review of the methods of homicide (Fig. 5) shows that the fatal injuries were mainly attributable to sharp or blunt force.

Sharp force injury was the most common cause of death in homicides as 39% ($n = 64$) of the victims died as a result

Table 1
Alleged motives for homicides in relation to means of assault ($n = 165$)

Motives	n	Means of assault					
		Sharp force	Blunt force	Firearm	Asphyxiation	Burning	Poisoning
Drinking quarrel	47	24	12	5	5	1	
Jealousy	27	13	4	7	2	1	
Quarrel	19	7	9	1	2		
Revenge	14	2	6	4	1	1	
Accident	7	1	3	2	1		
In conjunction of another crime	7		4		3		
Financial gain	5	2			2		1
Delusions	4	3	1				
Defending honour	4	2	2				
Self-defence	2	1	1				
Compassion	1			1			
Extended suicide	1				1		
Sexual motive	1				1		
Racism	1	1					
Justifiable homicide	1			1			
Other	2		1		1		
Unknown	22	8	5	6	3		

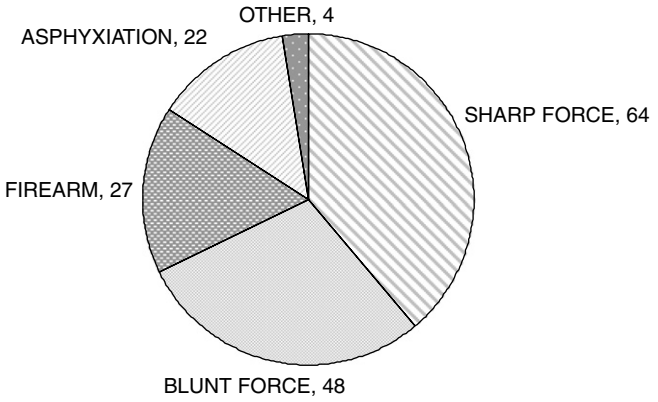

Fig. 5. Distribution of homicide methods.

of stabbings or incised wounds. 87% ($n = 56$) of the deaths were due to stabbing, and in 68% ($n = 38$) of these the fatal injury was located in the thoracic area. Vertical and horizontal stab wounds in the thoracic area were equal in numbers. The neck was the second most frequent location ($n = 12$). A single (fatal) stab wound was encountered in 41% ($n = 26$) of the cases. The relationship between the victim and the offender in relation to the number of wounds inflicted on the victim is presented in Table 2. In 72% ($n = 46$) of the cases the offender had found the weapon at the scene and in 22% ($n = 14$) the offender had brought it with him. In approximately two-thirds of the cases ($n = 42$), the weapon used was a household knife. In one particular case the injuries had been inflicted with 11 different knives, 8 forks, and 1 pair of scissors causing a total of 109 separate wounds. The information about the position of the clothing was obtained in 64% ($n = 41$) of the cases. Defence wounds were detected in 33% ($n = 21$) of the victims, but were mentioned only in 19% ($n = 12$) of the final autopsy reports.

Blunt force injuries accounted for 29% ($n = 48$) of deaths, 83% ($n = 40$) of those victims died of head injuries. Most commonly the offender used merely bodily force, and only in 40% ($n = 19$) of the incidents had a blunt instrument been used to inflict the injuries. In 31% ($n = 15$) of the victims some of the injuries had in all probability been inflicted by kicking. Death was caused by direct violence in 71% ($n = 34$) of the cases and by indirect violence (e.g., falling to the ground and sustaining head injuries after an attack) in 29% ($n = 14$).

Table 2
Number of sharp force wounds in victims ($n = 64$) by relationship to offender

Victim's relationship to offender	Number of sharp force wounds			
	Single	2–5	6–10	Over 10
Spouse or other intimate partner	2	3	2	8
Other family member	2			2
Friend	7	2	2	
Drinking companion	6	4	3	6
Acquaintance	6	2	1	2
Stranger	3			
Not known	1			

Of the homicidal deaths 16% ($n = 27$) were due to gunshot wounds, and the victims were males in 63% ($n = 17$) and females in 37% ($n = 10$). Deaths due to a single gunshot wound occurred in 74% ($n = 20$) of the cases. The predominant sites of the principal injury were the head in 56% ($n = 15$) and chest in 33% ($n = 9$). Handguns accounted for 70% ($n = 19$) of the firearms used to commit homicide. 58% of the firearms identified were illegal, e.g. not registered to the offender.

Asphyxiation was a method of homicide in 13% ($n = 22$) of the cases. Of these deaths, 45% ($n = 10$) were due to ligature strangulation, 23% ($n = 5$) resulted from manual strangulation, 9% ($n = 2$) were due to smothering and 18% ($n = 4$) resulted from drowning.

Other, less common homicide methods were burning ($n = 3$) and poisoning using insulin injection ($n = 1$).[16]

Children under 10 years of age ($n = 4$) were killed by strangulation/smothering or drowning, compared to older children (10–15 years of age; $n = 3$) of which 2 out of 3 were killed with a firearm.

Of the homicide victims 7% ($n = 11$) died as a result of dyadic death in which the offender committed suicide immediately or soon after the offence. In four additional cases, the perpetrator had allegedly planned to commit suicide. None of the homicide-suicide incidents involved multiple victims.

Of all the homicide victims 35% ($n = 58$) had only been injured once. On the other hand, the bodies of 36% ($n = 59$) of the homicide victims showed injuries due to other types of violence in addition to the actual method of killing. In 1% ($n = 2$) of the cases, the bodies had been dismembered. There were no cases were the death was caused by injuries inflicted with multiple methods.

3.8. Court proceedings

Of the 178 identified perpetrators, 88% ($n = 156$) were prosecuted in the Finnish courts of law. The only case in the study material, where the victim was killed by a police officer during law enforcement activity, was closed by a district attorney, and the case was never tried at court. From 1983 to 1997, the testimony of the forensic pathologist was required in 16% of the homicide cases, and from 1998 to 2002 in 37% of the cases. In each of these cases the forensic pathologist was summoned to the court as a witness.

In 62% ($n = 97$) of the prosecuted cases a forensic psychiatric examination was ordered by the court. 7 homicides were found to have been committed by 6 mentally ill persons, who according to Finnish law were not sentenced in court but instead committed to state mental hospital as criminally insane patients. An additional 27% ($n = 42$) of the defendants were deemed to have diminished criminal responsibility and received a shortened sentence. In one case, the court did not agree with the forensic psychiatrists' opinion.

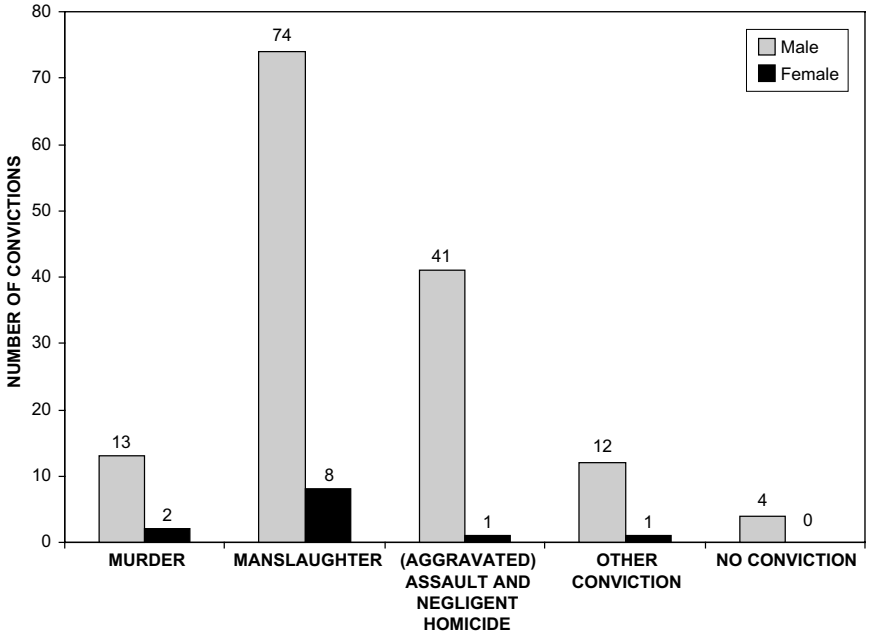

Fig. 6. Outcome in homicide trials ($n = 156$).

A conviction resulted in 97% ($n = 152$) of prosecuted cases (Fig. 6). 10% ($n = 15$) of the defendants were found guilty of murder, 53% ($n = 82$) of manslaughter, and 27% ($n = 42$) of (aggravated) assault and negligent homicide. Of the convicted arrestees, 84% ($n = 128$) received prison sentences, 9% ($n = 13$) suspended sentences, and 0.7% ($n = 1$) fines. The sentenced imprisonment periods for manslaughter varied from 4 to 13 years, and for (aggravated) assault and negligent homicide from 1 to 5.5 years. For murder the sentence was always lifetime imprisonment. 3% ($n = 4$) of the offenders charged with a homicide were acquitted at trial.

4. Discussion

Although the overall homicide number is relatively low, the extremely high clearance rate[3] and estimated low amount of undetected bodies of homicide victims[7] make Finnish homicides an excellent object of systematic analysis. Between 1983 and 2002, only approximately 6% of the homicide cases in Finland remained unsolved,[3] and in the present study the percentage in western Finland was even lower, i.e. 2% of the incidents.

The study area comprised the third largest city of Finland with its surroundings and was estimated to be a representative sample of the average Finnish population and society. The study showed that the incidence of homicides in the area covered displayed no significant underlying trends, varying between 3 and 13 cases annually. The average homicide rate was 2.7 per 100,000 (range 1.0–4.3 per 100,000). Since the average rate in whole Finland during the same time period was 3.0 per 100,000 (range 2.4–3.4 per 100,000),[3] the study can be seen to reflect the national situation even though the population in the study area represents less than 5% of the total population in Finland. Compared to data from closely situated capitals of Norway and Denmark the average rate was almost doubled.[17]

In previous studies the data on Finnish homicides have been based mainly on police crime reports, death certificates, or forensic psychiatric examinations. The computerized Criminal Complaint Index of the Finnish Police (RIKI) is a good source of some information but the contents and quality in the narrative sections are uneven, and the database cannot be regarded as a reliable source of accurate and final information on homicide details. Furthermore, studies based on crime reports often lack medicolegal data about the victim. Death certificates – another common source of information – consist of a diagnosis for immediate and underlying causes of death, and a short narrative summary of events. All the pertinent details are not always included in the summary which must be taken into account when assessing these events on the basis of death certificates only. Also, when the research is done from a pure medical point of view it usually concentrates on the victims and then data concerning the offenders often remain very limited. Only by using multiple sources of information can the cases be studied from different angles. Although previous research has covered some aspects on Finnish homicides, the present study can be regarded as unique in linking multiple sources of original data from different fields in order to obtain a more complete picture and better understanding of the status of homicide investigation.

The knowledge of the criminal background of the victims as well as the suspects is important to the homicide investigators and also for researchers in trying to better understand the course of events and the reasons behind

them. The present study proves that a high proportion of the homicide offenders in Finland have a history of criminal activities, and that recidivism is noteworthy. When alleged motives of homicides were studied in relation to means of assault it became obvious that a large proportion of homicides were committed without premeditation or even clear intention. This was also seen in the convictions, as the majority (80%) of defendants were convicted in criminal courts for manslaughter or (aggravated) assault and negligent homicide, making premeditated or in a particularly brutal or cruel manner committed murder (10%) a rarity in the picture of Finnish homicides.

The proportion of homicide-suicides (7%) was in accordance with previous studies.[4,8,9] These dyadic deaths that never result in a criminal charge or trial are, thus, a constant feature that must necessarily be taken into account when studying homicides. The data concerning these offenders are not readily available and are often missing or even overlooked and the statistics can, thus, become misleading. Good empirical data in Finnish homicide-suicides are still meagre, and this phenomenon deserves further investigation.

The general pattern of homicides in Finland has over the years remained relatively stable, and the results in this study were in accordance with previous studies[4,10] in stating that a typical Finnish homicide takes place at weekend, is connected with a drinking quarrel between old acquaintances, and is committed by a male with a knife. Sharp force injuries and blunt force injuries were the most frequent causes of death, as in several other Nordic countries.[17,19] Gunshot wounds caused death in 16% of the homicides. As in other Scandinavian studies[20] handguns were the weapon of choice, although in this study their preponderance was more obvious. The data also revealed that relatively few homicides in Finland are committed by individuals unknown to the victim, this being true in this material only in 13% of homicides.

In principle, a medico-legal expert should visit the scene of the crime in all suspected homicide cases to estimate the time of death and to examine the possible injuries of the victim(s) within the context of the event to be able to reconstruct them later.[24–29] In the present study, the value of the forensic pathologist's possible contribution to the investigation at the scene-of-the-crime had been overlooked in far too many instances, as the scene was visited only in 16% of the cases. The files did not reveal if the cause for this procedure was based on the investigating police officers' or the forensic pathologists' decision. At present, the police in Turku call the forensic pathologist to the crime scene in every suspected homicide case.

In Finland, alcohol abuse is an important factor in violent interactions that culminate in homicide. In a recent Finnish study[4] it was found that 80% of male homicide offenders and 43% of female offenders had been intoxicated at the time of the incident. According to the complete pretrial investigation files of the police concerning the 178 suspects in this study, 55% (93 males, 5 females) were reported or estimated to have been intoxicated by alcohol at the time of the offence, and another 7% (11 males, 1 female) by illicit or medicinal drugs. Nevertheless, it must be noted that only every fourth homicide offender was shown to have been actually tested for blood alcohol, and every tenth had been tested with breath alcohol analyser. The results differ significantly from previous findings suggesting that, when appropriate, blood alcohol tests should be performed to all offenders in order to obtain accurate, comparable data on intoxication levels.

Reliable data on substance use by victims are usually more readily available than data on offenders. In the beginning of the 1980s a study of medico-legal autopsy series in southern Finland reported that 71% of the male homicide victims and less than 35% of the female victims tested positive for alcohol.[22] In the criminological study performed by Lehti[4] it was concluded that 84% of adult male homicide victims and 52% of female victims had been under the influence of alcohol, that in 70% of homicides where both victim and perpetrator were adults all the parties had been under the influence of intoxicants, and that in only 16% of the crimes both the offender and the victim had been sober. Lunetta et al.[23] found in their study based on data derived from death certificates that 59% of male homicide victims and 32% of female victims were under the influence of alcohol. In this study, blood alcohol was determined in the majority (93%) of the victims, with 66% of the male victims and 39% of the female victims testing positive. The proportion of alcohol-positive cases in this study was, thus, lower than in the above mentioned criminological study,[4] but exceeded the proportions in the study performed by Lunetta et al. High BAC (over 1.5 g/l) was clearly overrepresented. Furthermore, based on the documented BAC levels, it was concluded that in a quarter of the homicides both the victim and the offender had been drinking, and that in only 4% of the incidents both parties had been proven to be sober. It is also of interest that in the present study only 35% of the victims who were tested had been screened for drugs in addition to alcohol. Since more than one-third of those victims tested positive for medicinal drugs, and a small proportion also for illicit drugs, it suggests that even though drugs are not considered a vast problem in Finland, drug screening should be performed more routinely in medico-legal investigations. In other Nordic countries this seems to be more of a routine, since from 1985 to 1994, 62% of homicide victims in Copenhagen and 47% in Oslo were screened.[17]

It is beyond dispute that the medico-legal autopsy protocol should be as detailed and comprehensive as possible to later facilitate the retrieval of all the relevant findings. Considerable attention should also be given to ensure that all pertinent data from the protocol are transferred to the final statement or report where an evaluation of the significance of the findings and results is made by the forensic pathologist.[25,27] The final statement is an essential legal document, which sometimes can be the only part of the whole forensic pathologist's report that is actually presented for example in

court, and it should not leave any room for speculation. For example, it is of importance to know if the victim has been able to protect himself. Hence, if defence wounds have been detected in the autopsy, they should be mentioned also in the final statements. Autopsy protocols of sharp-force homicides in this study included obvious defence wounds in one-third of the victims, but the defence wounds were not mentioned at all in the final statements of approximately half of those cases.

The results of a medico-legal autopsy are made available to the prosecutor as well as the defence lawyer as soon as possible without compromising the police investigations, and they may play a crucial role in the legal process following homicide.[30] The judicial practice in Finland was changed during the study period, and this has reflected on the presentation of cases in court. In 1997, the new Criminal Procedure Act[31] was passed stating that the cases were to be dealt within a continuous and orally conducted main hearing. Before that, the forensic pathologist was summoned to appear in court in only every sixth homicide case, and in the following years the rate according to this study more than doubled. Today, the presence of the forensic pathologist as a witness during the trial is more of a rule. A peculiarity featured in this study is that although the autopsy reports and statements were acknowledged as expert reports the forensic pathologists who had conducted the investigations had regardless in every case been summoned to appear in the Finnish criminal courts as common witnesses and not as experts. According to the law in Finland[32] the witness is not allowed to make any interpretations or conclusions but instead adhere to stating the facts. Should the forensic pathologist in court keep to the written law and waive making any assessments or give any of the scientifically valid opinions frequently asked for, can compromise the value and relevance of the testimony altogether. The reasons behind the current policy can possibly be derived from the custom of Finnish courts to employ very few experts altogether, or from financial aspects. There has been an on-going debate on the subject in Finland, but so far no agreement between the court officials and medico-legal experts has been reached.

According to different studies, 70–85% of the homicide offenders are subjected by Finnish courts of law to a forensic psychiatric examination.[14,33,34] In this material the number of all offenders was lower (54%), a slightly higher figure (62%) was obtained when all the offenders who committed suicide after the offence and suspects who were not prosecuted in criminal court were excluded from the total count.

The results of this study suggest the need of a centralised database including all relevant information on homicides. The OIRE-database, established by the National Board of Health in 1985 and including some basic data of all medico-legal autopsies performed in Finland, was an invaluable source of victim data but was, unfortunately, closed down in 1994. In 2002, the Ministry of Interior, the National Research Institute of Legal Policy, and the Police Academy started a Finnish homicide monitoring project.[4] Unfortunately, this new database covers mainly criminological aspects of police investigation omitting both medico-legal and court data, which would add substantial information into it.

Homicide always represents a challenge to the forensic pathologists, the law enforcement officials, as well as the judicial system. In this study, 4% of the homicides were not detected until the medico-legal autopsy, and it is unquestioned that a comprehensive and in all respects properly performed medico-legal examination is a cornerstone of any judicial system in achieving and maintaining the highest possible quality of homicide investigation. The preliminary results presented in this article suggest that even though Finland has been mentioned as an example of high quality cause-of-death examinations,[35] there still remains room for improvement. In addition, the forensic pathologists, the law enforcement officials, and the judicial system should invest further efforts in flexible co-operation in cases of criminal investigation.

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